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Response

Amendments to the Claims

Please amend the claims as follows:

1-142. (canceled)

143. (currently amended) A semiconductor structure, comprising:

at least two overlying faceted layers of single crystal crystals of epitaxial silicon, each epitaxial silicon crystal layer comprising:

- a) a top faceted surface defining a facet, and
- b) sidewalls with insulative material thereover, and

an uppermost faceted layer of single crystal epitaxial silicon crystal of the at least two overlying crystals layers of epitaxial silicon having a layer of an insulative material over the faceted top surface of said uppermost crystal layer of epitaxial silicon;

wherein the structure is disposed situated on a substrate in a vertical orientation.

144. (previously presented) The semiconductor structure of Claim 143, wherein the insulative layer comprises an oxide film, a nitride film, an oxidized nitride film, or a composite oxide/nitride film.

145. (previously presented) The semiconductor structure of Claim 144, wherein the insulative layer comprises a silicon nitride film.

146. (previously presented) The semiconductor structure of Claim 145, wherein the silicon nitride film has a thickness of about 5 to about 20 nm.

147. (previously presented) The semiconductor structure of Claim 144, wherein the insulative layer comprises a silicon oxide film.

148. (previously presented) The semiconductor structure of Claim 147, wherein the silicon oxide film has a thickness of about 2 to about 5 nm.

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149. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each epitaxial silicon crystal of said layers comprising a top faceted surface [5] and sidewalls, and an insulative material over the sidewalls, the top surface defining a facet; an uppermost layer epitaxial silicon crystal of the at least two overlying crystals layers having a layer of an insulative material over the top faceted surface; one or more of the layers of epitaxial silicon crystals comprising a conductivity enhancing dopant; wherein the structure is disposed situated on a substrate in a vertical orientation.

150. (previously presented) The semiconductor structure of Claim 149, wherein the conductivity enhancing dopant comprises a p-type dopant.

151. (previously presented) The semiconductor structure of Claim 150, wherein the p-type dopant is selected from the group consisting of diborane, boron trichloride, and boron trifluoride, and combinations thereof.

152. (previously presented) The semiconductor structure of Claim 149, wherein the conductivity enhancing dopant comprises an n-type dopant.

153. (previously presented) The semiconductor structure of Claim 152, wherein the n-type dopant is selected from the group consisting of phosphine, arsine, and combinations thereof.

154. (currently amended) The semiconductor structure of Claim 149, wherein one or more of the layers of epitaxial silicon crystals comprises a concentration gradient of the dopant.

155. (currently amended) The semiconductor structure of Claim 154, wherein the concentration gradient comprises a low to high concentration of the dopant within the one or more of the layers of epitaxial silicon crystal, with the high dopant concentration at the top surface of said crystal one or more of the layers.

156-166. (canceled)

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167. (previously presented) The semiconductor structure of Claim 143, being a component of a transistor.

168. (previously presented) The semiconductor structure of Claim 167, being a transistor gate.

169. (previously presented) The semiconductor structure of Claim 167, being a source/drain diffusion region.

170. (previously presented) The semiconductor structure of Claim 149, being a component of a transistor.

171. (previously presented) The semiconductor structure of Claim 170, being a transistor gate.

172. (previously presented) The semiconductor structure of Claim 170, being a source/drain diffusion region.

173. (currently amended) A semiconductor structure, comprising:
at least two overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layers of single crystal epitaxial silicon crystal; each of said faceted layers epitaxial silicon crystal comprising a faceted top surface and insulated sidewalls, the top surface defining a facet; and the uppermost faceted layer of epitaxial silicon crystal having an insulated top surface; the structure disposed situated on a substrate in a vertical orientation; the structure being a component of a transistor.

174. (previously presented) The semiconductor structure of Claim 173, being a transistor gate.

175. (previously presented) The semiconductor structure of Claim 173, being a source/drain diffusion region.

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176. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers epitaxial silicon crystal comprising a faceted top surface, sidewalls, and insulative material over the sidewalls, the top surface defining a facet; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers silicon crystals having a layer of an insulative material over the top surface; the structure disposed situated on a substrate in a vertical orientation; the structure being a component of a transistor.

177. (previously presented) The semiconductor structure of Claim 176, being a transistor gate.

178. (previously presented) The semiconductor structure of Claim 176, being a source/drain diffusion region.

179. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers epitaxial silicon crystal comprising a faceted top surface, sidewalls, and insulative material over the sidewalls, the top surface defining a facet; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers silicon crystals having a layer of an insulative material over the top surface; one or more of the at least two overlying faceted layers of epitaxial silicon crystals comprising a conductivity enhancing dopant; the structure disposed situated on a substrate in a vertical orientation; and the structure being a component of a transistor.

180. (previously presented) The semiconductor structure of Claim 179, being a transistor gate.

181. (previously presented) The semiconductor structure of Claim 179, being a source/drain diffusion region.

182. (currently amended) A semiconductor device, comprising:

a structure comprising at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal comprising a faceted top

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surface and insulated sidewalls ~~with the top surface defining a facet, and an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers of epitaxial silicon crystals having an insulated top surface; the structure disposed situated on a substrate in a vertical orientation.~~

183. (previously presented) The semiconductor device of Claim 182, comprising a transistor.

184. (previously presented) The semiconductor device of Claim 183, wherein the structure comprises a transistor gate.

185. (previously presented) The semiconductor device of Claim 183, wherein the structure comprises a source/drain diffusion region.

186. (currently amended) A semiconductor device, comprising:

a structure comprising at least two overlying ~~crystals~~ faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon ~~crystal~~ comprising a faceted top surface and sidewalls ~~with the top surface defining a facet, and insulative material over the sidewalls; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers of epitaxial silicon crystals~~ having a layer of an insulative material over the top surface; and the structure disposed situated on a substrate in a vertical orientation.

187. (previously presented) The semiconductor device of Claim 186, comprising a transistor.

188. (previously presented) The semiconductor device of Claim 187, wherein the structure comprises a transistor gate.

189. (previously presented) The semiconductor device of Claim 187, wherein the structure comprises a source/drain diffusion region.

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190. (currently amended) A semiconductor device, comprising:

a structure comprising at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon ~~crystal~~ comprising a faceted top surface and sidewalls, ~~with the top surface defining a facet~~ and insulative material over the sidewalls; an uppermost faceted layer of epitaxial silicon ~~crystal~~ of the at least two overlying faceted layers of epitaxial silicon ~~crystals~~ having a layer of an insulative material over the top surface; one or more of the at least two faceted layers of epitaxial silicon ~~crystals~~ comprising a conductivity enhancing dopant; and the structure disposed situated on a substrate in a vertical orientation.

191. (previously presented) The semiconductor device of Claim 190, comprising a transistor.

192. (previously presented) The semiconductor device of Claim 191, wherein the structure comprises a transistor gate.

193. (previously presented) The semiconductor device of Claim 191, wherein the structure comprises a source/drain diffusion region.

194-195. (canceled)

196. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of the at least two faceted layers of epitaxial silicon ~~crystals~~ having a faceted top surface, sidewalls, and insulative spacers over the sidewalls, ~~and the top surface defining a facet~~; an uppermost faceted layer of epitaxial ~~crystal~~ silicon having a layer of an insulative material over the top surface; one or more of the at least two layers of epitaxial silicon ~~crystals~~ comprising a conductivity enhancing dopant; and the structure disposed situated on a substrate in a vertical orientation.

197. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon ~~crystal~~ comprising a faceted top surface, sidewalls, and

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insulative material along the sidewalls, and the top surface defining a facet; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers epitaxial silicon crystals having a layer of an insulative material over the top surface of said crystal uppermost faceted layer; and the structure disposed situated on a substrate in a vertical orientation.

198. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal comprising a faceted top surface defining a facet, and insulated sidewalls; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers epitaxial silicon crystals having a layer of an insulative material over the top surface of said crystal uppermost faceted layer; one or more of the faceted layers of epitaxial silicon crystals comprising a conductivity enhancing dopant; and the structure disposed situated on a substrate in a vertical orientation.

199. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal having a faceted top surface defining a facet, sidewalls, and insulative spacers over the sidewalls; an uppermost faceted layer of epitaxial silicon crystal having a layer of an insulative material over the top surface of said crystal uppermost faceted layer; the structure disposed situated on a substrate in a vertical orientation; the structure being a component of a transistor.

200. (currently amended) A semiconductor structure, comprising:

at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal having a faceted top surface defining a facet, sidewalls, and insulative spacers over the sidewalls; an uppermost faceted layer of epitaxial silicon crystal having a layer of an insulative material over the top surface of said crystal uppermost faceted layer; one or more of the at least two overlying faceted layers of epitaxial silicon crystals comprising a conductivity enhancing dopant; the structure disposed situated on a substrate in a vertical orientation; and the structure being a component of a transistor.

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201. (currently amended) A semiconductor device, comprising:

a structure comprising at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal having a faceted top surface and insulated sidewalls, the top surface defining a facet; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying faceted layers of epitaxial silicon crystals having a layer of an insulative material over the top surface of said uppermost silicon crystal faceted layer; and the structure disposed situated on a substrate in a vertical orientation.

202. (currently amended) A semiconductor device, comprising:

a structure comprising at least two overlying crystals faceted layers of single crystal epitaxial silicon, each of said faceted layers of epitaxial silicon crystal comprising a faceted top surface defining a facet, and sidewalls covered by an insulative material; an uppermost faceted layer of epitaxial silicon crystal of the at least two overlying epitaxial silicon faceted layers crystals having a layer of an insulative material over the top surface of said uppermost faceted layer silicon crystal; one or more of the faceted layers of epitaxial silicon crystals comprising a conductivity enhancing dopant; and the structure disposed situated on a substrate in a vertical orientation.

203. (currently amended) A semiconductor structure disposed on a substrate, the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of epitaxial silicon crystal on the substrate; the first faceted layer of epitaxial silicon crystal comprising sidewalls[,] and a faceted top surface defining a facet;

depositing an insulative layer thereover;

removing a portion of the insulative layer to expose the top surface of the first faceted layer of epitaxial silicon crystal;

selectively growing a second faceted layer of epitaxial silicon crystal on the exposed top surface of the first faceted layer of epitaxial silicon crystal, the second faceted layer of epitaxial silicon crystal comprising sidewalls and a faceted top surface defining a facet; and

depositing an insulative material layer thereover.

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204. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost layer epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, and insulative material disposed on the sidewalls, the top surface of said crystals defining a facet, and the uppermost layer epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of epitaxial silicon crystal on a substrate;
depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first faceted layer of epitaxial silicon crystal;

selectively growing a second faceted layer of epitaxial silicon crystal on the exposed top surface of the first faceted layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second faceted layer of epitaxial silicon crystal;

repeating the steps of selectively growing an faceted layer of epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; wherein, upon selectively growing the uppermost faceted layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost faceted layer of epitaxial silicon crystal.

205. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost layer epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

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selectively growing overlying faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each faceted layer of epitaxial silicon crystal, depositing an insulative film over the underlying layers of epitaxial silicon crystals, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the epitaxial silicon crystal on the exposed top surface of the said preceding layer of epitaxial silicon crystal to form a faceted layer of epitaxial silicon; and,

upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

206. (currently amended) A stacked, vertically oriented semiconductor structure disposed on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost faceted layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystal faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each faceted layer of epitaxial silicon crystal, depositing an oxide film and removing a portion of the oxide film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the faceted layer of epitaxial silicon crystal on the exposed top surface of the said preceding layer of epitaxial silicon crystal; and,

upon selectively growing the uppermost faceted layer of epitaxial silicon crystal, depositing an oxide film layer thereover, with no subsequent removal of the oxide film layer from the top surface of said uppermost faceted layer of epitaxial silicon crystal.

207. (currently amended) A stacked, vertically oriented semiconductor structure disposed on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial

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silicon including an uppermost faceted layer of single crystal epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost faceted layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each faceted layer of epitaxial silicon crystal, depositing a nitride film and removing a portion of the nitride film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the faceted layer of epitaxial silicon crystal on the exposed top surface of the said preceding layer epitaxial silicon crystal; and,

upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing a nitride film layer thereover, with no subsequent removal of the nitride film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

208. (currently amended) A stacked, vertically oriented semiconductor structure disposed on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of single crystal epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost faceted layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface of said layer; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure by heating the substrate to about 450°C to about 950°C., and flowing at least one silicon precursor gas over the substrate at a rate of about 10 sccm to about 500 sccm, for about 15 seconds to about 30 seconds to form a faceted layer of epitaxial silicon;

wherein, prior to selectively growing each faceted layer of epitaxial silicon crystal, depositing an insulative film over the underlying layer epitaxial silicon crystals, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon

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erystal, and selectively growing the faceted layer of epitaxial silicon erystal on the exposed top surface of the said preceding layer of epitaxial silicon erystal; and,

upon selectively growing the uppermost layer of epitaxial silicon erystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon erystal.

209. (currently amended) A stacked, vertically oriented semiconductor structure disposed on a substrate, the structure comprising overlying erystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of single crystal epitaxial silicon erystal; each of said faceted layers of epitaxial silicon erystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon erystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying erystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure by heating the substrate and flowing at least one silicon precursor gas over the substrate at a rate and pressure to provide a growth rate of the epitaxial silicon crystal at about 20 nm/minute to about 40 nm/minute such that a faceted layer of epitaxial silicon is formed;

wherein, prior to selectively growing each layer of epitaxial silicon erystal, depositing an insulative film over the underlying layers of epitaxial silicon erystals, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon erystal, and selectively growing the faceted layer of epitaxial silicon erystal on the exposed top surface of the said preceding layer of epitaxial silicon erystal; and,

upon selectively growing the uppermost layer of epitaxial silicon erystal depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon erystal.

210. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying erystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of single crystal epitaxial silicon erystal; each of said faceted layers of epitaxial silicon erystal having a faceted top surface and sidewalls,

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the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure by heating the substrate and flowing at least one silicon precursor gas over the substrate at a rate and pressure to provide a growth rate of the epitaxial silicon crystal of less than about 10 nm/minute such that a faceted layer of epitaxial silicon is formed;

wherein, prior to selectively growing each layer of epitaxial silicon crystal, depositing an insulative film over the underlying layers of epitaxial silicon crystals, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the faceted layer of epitaxial silicon crystal on the exposed top surface of the said preceding layer of epitaxial silicon crystal; and

upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

211. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost layers of single crystal epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal oxidation, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the faceted layer of epitaxial silicon crystal on the exposed top surface of the said preceding layer of epitaxial silicon crystal; and,

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upon selectively growing the uppermost layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal oxidation, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

212. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal nitridation, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the layer of epitaxial silicon crystal on the exposed top surface of the said preceding layer of epitaxial silicon crystal; and,

upon selectively growing the uppermost layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal nitridation, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

213. (currently amended) A semiconductor structure disposed situated on a substrate, the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of epitaxial silicon crystal on the substrate; the first layer of epitaxial silicon crystal comprising sidewalls[,] and a faceted top surface defining a facet;

depositing an insulative layer thereover;

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removing a portion of the insulative layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal while depositing a conductivity enhancing dopant, the second layer of epitaxial silicon crystal comprising sidewalls[,] and a faceted top surface defining a facet;

depositing an insulative material layer thereover.

214. (currently amended) A semiconductor structure disposed situated on a substrate, the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of epitaxial silicon crystal on the substrate; the first layer of epitaxial silicon crystal comprising sidewalls[,] and a faceted top surface defining a facet;

depositing an insulative layer thereover;

removing a portion of the insulative layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal, the second layer of epitaxial silicon crystal comprising sidewalls[,] and a faceted top surface defining a facet;

doping the second layer of epitaxial silicon crystal with a conductivity enhancing dopant by ion implantation, and

depositing an insulative material layer thereover.

215. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

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selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure by heating the substrate and flowing at least one silicon precursor gas over the substrate at a rate and pressure to provide a growth rate of the epitaxial silicon crystal at about 20 nm/minute to about 40 nm/minute such that a faceted layer of epitaxial silicon is formed, wherein selectively growing at least the uppermost layer of epitaxial silicon crystal comprises flowing the at least one silicon precursor gas with a conductivity enhancing dopant over the substrate; and

prior to selectively growing each layer of epitaxial silicon crystal, depositing an insulative film over the underlying layers of epitaxial silicon crystals, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the layer of epitaxial silicon crystal on the exposed top surface of the preceding layer of epitaxial silicon crystal; and,

upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

216. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet-and insulative material disposed on the sidewalls, and the uppermost faceted layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the said first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the said first layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

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removing a portion of the insulative film layer to expose the top surface of the said second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing an a faceted layer of single crystal epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; and during the step of selectively growing the uppermost faceted layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant to form a concentration of the dopant within the said uppermost layer epitaxial silicon crystal;

wherein, upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

217. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing an a faceted layer of single crystal epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; and during the step of selectively growing the uppermost

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layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant at a variable rate to provide a concentration gradient of the dopant within the uppermost layer of epitaxial silicon crystal;

wherein, upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

218. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a crystal and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing as a faceted layer of epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; and during the step of selectively growing the uppermost layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant at an increasing rate over time to provide a low to high concentration of the dopant within the uppermost layer of epitaxial silicon crystal;

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wherein, upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

219. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the first faceted layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing as a faceted layer of single crystal epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; wherein the uppermost layer of epitaxial silicon crystal is selectively grown while doping, and upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

220. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of single crystal epitaxial silicon crystal;

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each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing an faceted layer of single crystal epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure;

wherein, upon selectively growing the uppermost layer of epitaxial silicon crystal, doping the uppermost layer of epitaxial silicon crystal with a conductivity enhancing dopant by ion implantation, and depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

221. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

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wherein, prior to selectively growing each layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal oxidation, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the faceted layer of epitaxial silicon crystal on the exposed top surface of the preceding layer of epitaxial silicon crystal; and, during the step of selectively growing the uppermost layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant to form a concentration of the dopant within the uppermost layer of epitaxial silicon crystal; and

upon selectively growing the uppermost layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal oxidation, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

222. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing overlying crystals faceted layers of single crystal epitaxial silicon to form a stacked, vertically oriented structure;

wherein, prior to selectively growing each layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal nitridation, removing a portion of the insulative film to expose the top surface of the preceding layer of epitaxial silicon crystal, and selectively growing the layer of epitaxial silicon crystal on the exposed top surface of the preceding layer of epitaxial silicon crystal; and, during the step of selectively growing the uppermost layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant to form a concentration of the dopant within the said uppermost layer of epitaxial silicon crystal; and

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upon selectively growing the uppermost layer of epitaxial silicon crystal, forming an insulative film over the layers of epitaxial silicon crystals by rapid thermal nitridation, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

223. (currently amended) A stacked, vertically oriented semiconductor structure disposed situated on a substrate, the structure comprising overlying crystals faceted layers of single crystal epitaxial silicon including an uppermost faceted layer of epitaxial silicon crystal; each of said faceted layers of epitaxial silicon crystal having a faceted top surface and sidewalls, the top surface defining a facet and insulative material disposed on the sidewalls, and the uppermost layer of epitaxial silicon crystal comprises an insulative film disposed on the top surface; the structure formed by a process comprising the steps of:

selectively growing a first faceted layer of single crystal epitaxial silicon crystal on a substrate;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the first layer of epitaxial silicon crystal;

selectively growing a second faceted layer of single crystal epitaxial silicon crystal on the exposed top surface of the first layer of epitaxial silicon crystal;

depositing an insulative film layer thereover;

removing a portion of the insulative film layer to expose the top surface of the second layer of epitaxial silicon crystal; and

repeating the steps of selectively growing an faceted layer of single crystal epitaxial silicon crystal, depositing an insulative film layer, and removing a portion of the insulative film layer to form the stacked structure; and during the step of selectively growing the uppermost layer of epitaxial silicon crystal, depositing a conductivity enhancing dopant to form a concentration of the dopant within the uppermost layer of epitaxial silicon crystal;

wherein, upon selectively growing the uppermost layer of epitaxial silicon crystal, depositing an insulative film layer thereover, with no subsequent removal of the insulative film layer from the top surface of said uppermost layer of epitaxial silicon crystal.

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224. (currently amended) The semiconductor structure of Claim 143, wherein each of the faceted top surface surfaces of at least one of said faceted layers of epitaxial silicon crystals defines a facet having a (100) plane orientation.

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Supplemental Information Disclosure Statement.

Pursuant to 37 C.F.R. §§ 1.56 and 1.97, Applicant submits the information listed on the enclosed Form 1449/PTO for consideration in the above-identified application. No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102/103.

The references listed on the Form PTO 1449 were submitted in a related application USSN 10/379,494. Accordingly, a copy of these documents is not provided because these documents are available in the co-pending application. However, if these references are not available to the Examiner, Applicant will provide a copy upon request.

This Supplemental Information Disclosure Statement is being filed after the mailing of a final action and before a Notice of Allowance. Accordingly, please charge the necessary fee for the consideration of these references to Account No. 23-2053.

Consideration of the listed references is requested, and return of the enclosed Form 1449/PTO is requested showing the items as being initialed and considered.

The Form 1449/PTO is attached hereto at the Appendix.